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Sharing Ideas at Work: Workstation and Empathic Design

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Sharing Ideas at Work

"W O R K S T A T I O N a n d E M P A T H I C D E S I G N"

By

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I will always be grateful and indebted for it.

“The most important thing in the room is not the furniture—it’s the **people**.”

Gilbert Rohde, 1930. Herman Miller.

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Abstract

In anywhere people want to promote interaction and cooperation, the furniture system "*Common*" provides a versatile alternative to improve the collaboration between team members. By using empathy as inspiration, this system promotes communication, adaptability, expansion and connectivity among people in office workspaces. The main **theoretical premise behind this product is empathic design whose** user-centered approach attends the user's feelings toward a product.

The result of this research was applied to development of an ***Office Desk***, main product of the furniture system called ***Common***. The *Desk* is a versatile structural solution that allows attaching accessories in an elegant and easy way. Its modern and simple shapes generate a clean and customizable product easy to assemble, package and transport. *Common* also reduces environmental impact by using recyclable materials, simple shapes, and low-tech manufacturing processes that generate minimal waste at the end of the product lifecycle. All these features generate positive experiences not only to the users at the office environment, but to anyone related with the production and commercialization of it. **Further development in this system** may include the study of new user scenarios, eco-materials and new ways to connect elements.

Keywords: workspace, empathy, communication, industrial design and sustainability.

Introduction

The passion for workspaces and its possible effects on the well-being of the people who interact there has inspired the development of industrial products during the past two centuries. The office as an extension of everyday life, as a space where resilience plays a determinant factor for achieving the employment goals, where communication and sense of teamwork are needed to generate the business unit, designing a space based on these needs is today, according to experts, the most appropriate way to address the issue. The main objective of this study is to demonstrate that using empathy as inspiration and design method can generate solutions for the workspace that significantly improve the user experience as well as create new user behaviors that benefit productivity in the workspace.

This work is based on experience within workspaces for creative process. After the phase of analytical observation we perceived that the lack of an appropriate organization according to the stage of the design process could affects the teamwork performance and consequently generate a negative user experience. Based on this results we consider that a furniture designed from social needs such as communication and sense of group belonging, could improve productivity within a company and generate a positive experience. In the quest to change the experience of people in the workplace, we have focused on **Empathic design**, which is a user-centered design approach base on observation for seeking needs. We defined three group of users for this study. Group A: determined by undergraduate and graduate industrial design students from the Rochester Institute of Technology. Group B: an experimental design consultancy created for the Summer Co-Ops in industrial design at RIT, and Group C: represented by a company target. It is an industrial design consulting, *BZ Design* – whose profile is very similar to our user target, young designers and entrepreneurs. As a complement to the user research, we visited the School of Design at Harvard University, as well as the business incubator at the University of Rochester in New York in order to analyze the space design.

The second phase of this research was based on interviews. The results define the design parameters from a functional and emotional point of view. The questions were focus on needs of the physical environment and how its conditions could affect individual and group activities, then the result were compared with those derived from the analytical observation of the first phase of research. The conclusion was that users needed a workspace that could be adaptable to different moments of the design process.

Due to the nature of the product, furniture system for a workspace we decided apply the **methodology** of the professor Stan Rickel, that uses the physical model making as main strategy during for creative process. Once the design statement was stablished based on the research, and defined the product requirements, we decided play with materials and surfaces for having the perception of proportion as well as receiving feedback from users from the very beginning of the process, this allows us to make the design decisions based on the user preferences. The digital 3D modeling facilitated the study as a system. Modularity, forms, structures and aesthetics were tested thanks to the 3D printing technology. *Common* was tested in different materials, wood, metal, acrylic, and PLA (3d Printing). Finally from the sustainability perspective, *Common* is a friendly product system that consider the environmental impact by using recyclable materials and simple forms that permit the use of low-tech manufacturing processes and generate minimal waste at the end of product lifecycle. From the business perspective thanks to its affordable manufacturing technology and modularity, the cost value is much lower than competitors.

Common: **Empathy + sustainable product design = positive user experience**

Chapter 1 Background of Study

1.1 The **Experience** inspiration. **RIT,** Summer 2014

1.2 **Problem Definition**

1.2.1 Workspace

1.2.2 Communication in the office

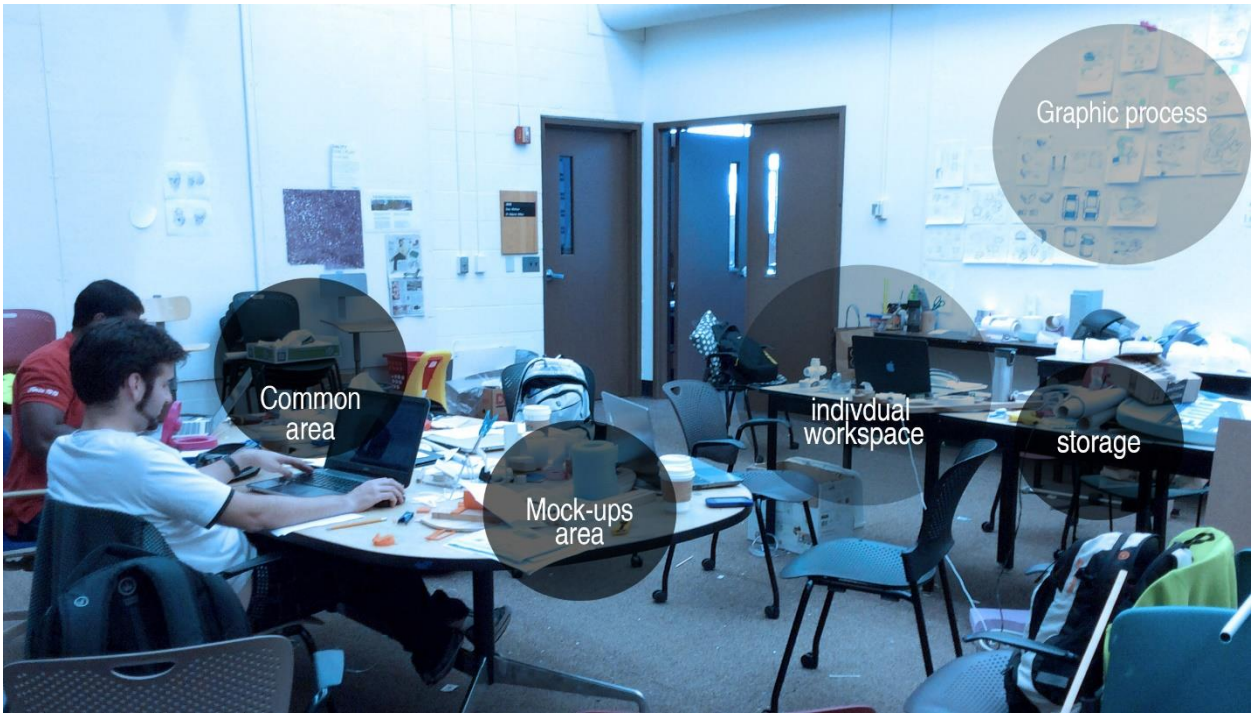
1.2.3 Environmental context

1.3 Target Market

1.3.1 Benchmarking: shapes, structures materials, technologies, systems, and storage.

1.1 The Experience inspiration. RIT, summer 2014

During the summer 2014 the MFA in Industrial Design program organized the first Summer CO-OPS on Rochester Institute of Technology campus. The design team was composed of RIT students: five industrial designers, a mechanical engineer, one electrical engineer, and two academic advisers (Stan Rickel: director RIT- MFA Industrial Design Program and, Richard DeMartino: Chair for Innovation and Entrepreneurship at RIT). Working along with Regional Health and Non Profit Organizations such as the National Multiple Sclerosis Society and the Association for the Blind and Visually Impaired, we developed potential solutions to help patients with MS to transport themselves between different seating surfaces, as well as inclusive technology accessories to help visually impaired people to efficiently interact with touchscreen devices.

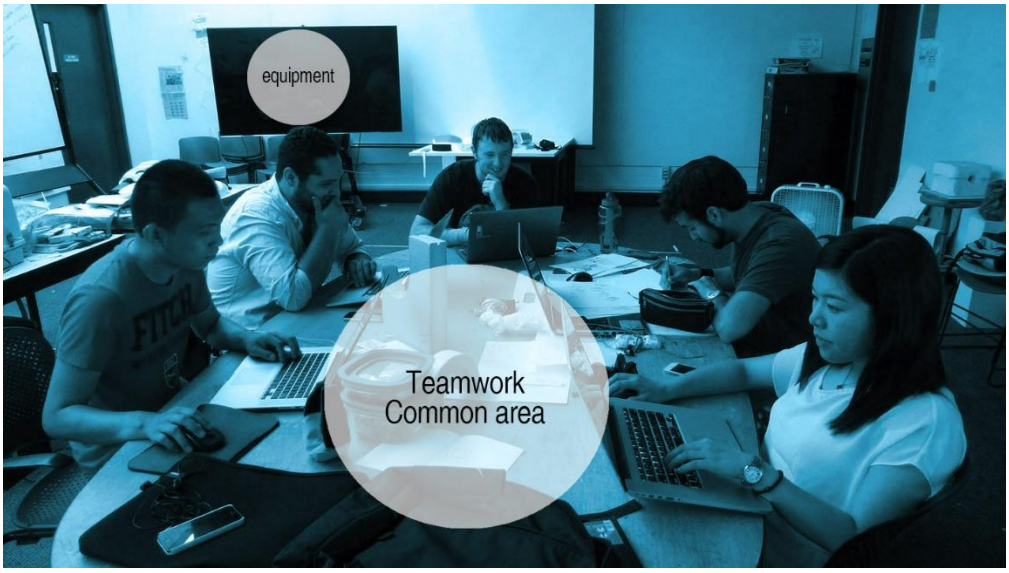


From the perspective of a project manager I was constantly analysing the group dynamic in order to improve the collective experience while reaching our goals, in this occasion, create four design solutions within a ten weeks work plan. As a group we faced different challenges not only from the design perspective but related with differences into cultural backgrounds, professional experience and age of the team members. The space played an important role for the projects development. We worked on a comfortable classroom equipped with independent tables for each

member, two smart TVs for digital presentations, 2 blackboards for group sketching, and an oval conference table for group discussions, and meetings with sponsors, advisers and clients. The classroom walls were used as a board for showing the graphic process.

Space challenges: organization and cleaning. The space became a reduce version of a design consultancy studio, this means, the whole design process was executed in this closed space, with all projects demands for physical prototyping as well as for displaying the graphic process and presentations.

Furniture-user interaction: having individual and group workspace facilitated interaction among team members. The distance between each workstation was fundamental for giving and receiving feedback. Some challenges we faced were related with the lack of versatility on the table tops, storage and separations in the office space. We did not have enough space to organize the design process in the personal workspace, individuals in consequence sometimes got drawing papers, materials or small models misplaced. This occasional situation caused delays in production time and waste of time while preparing the space for meetings with sponsors or advisers. Currently in the furniture market, there are many good solutions for the design of office space. There are also special solutions for workspaces for professional areas associated with design and art, but all highly expensive for users with the profile of our team members. Young designers who want to start a business independently.



Work environment.
Summer Co-Ops.
RIT 2014.

1.2 Problem definition

Statement: Create a workspace system that facilitate interpersonal relationships between design co-workers while improving team productivity.

Situation: Young designers who start a business lack the experience of multidisciplinary teamwork. The combination of pressure situations, unsuitable spaces or inefficient use of time and resources are a common scenario. Efficient communication during the design process among team members as well as with the client, becomes a determining factor in project success.

1.2.1 Workspace

"New work: The new workplace connects to the knowledge society and becomes a creative economy. The raw material is knowledge, but is it not utilized until something new is produced from this knowledge. Creativity networks and individuality define this epoch".

Recent studies on workspaces and their collective consciousness have provided important support to our study. Today's furniture as well as the one for the future must support multiple media and technologies that require specific features for them. As it is well known, we are living in an era of knowledge where instant and effective communication has become a necessity in the workplace as well as in everyday life. As mentioned by the authors Bene T. and Gatterer H. in their book "*The new workspaces. Trend report on Office and Working Environments"*, they stablished that communication and creativity are gaining importance in the workplace. In this dialogue *creativity* is a word that caught our attention because regardless of the context, is becoming more and more demanded in the workplace, reason why many companies have been adopting the design thinking process as strategy to work.

Bene and Gatterer studied the relevant trends in the design of workspaces of the 21st century in order to redefine the space concepts by finding the new rules. To illustrate their theories they asked readers to imagine the workspace in 2020 looking around and describing: What do they experience there? Who do they see? What kind of work is being done around them? and Which

technology is being used? While studying their theories we not only did position ourselves in the future but in the present work context, in our case, we looked around the in the design studio of academic workspace environment at the Industrial Design School of the Rochester Institute of Technology.

Graduate studio.
RIT 2014.

Realizing that the new trends for the workspaces are not only offices, but train stations, homes, parks, cafes and others, we decided to study the workspace for industrial design because despite technologies designers continue need physical spaces for the development of the different stages of the creative process. So in seeking to improve the experience of people in the workplace, we have focused on empathic design as the method to analyze this reality and create products that meet the real needs of people.

Summer Co-Ops.
RIT 2014. Personal space.

In the article, "*An Idea Whose Time Has Come"* by Marc Kristal, the author makes a historical analysis of the evolution of office furniture through the company Herman Miller in order to illustrate their last trends in design. He presents from the oldest workstations where the focus was the user center design, until the new alternatives. In the following from 1968 is shown the model Action Office II where the company applied the modularity as design statement to organize the space. They incorporate a modular panel system, with work surfaces and storage units, that as a group could generate almost and organic configuration.

It's a resolutely forward-looking vision. Yet this emphasis on what the company calls "human-centered problem-solving" has been the hallmark of Herman Miller since 1930, when Gilbert Rohde, its first design director, famously declared, "The most important thing in the room is not the furniture—it's the people." Kristal, M.

For Mark Schurman, Herman Miller's corporate communications director one of his first directives was, 'Anything but furniture.' With this order the company continued to develop office furniture for generating different working dynamic, modern and innovative look. The model studio 7.5's lightweight, present modules can be combined to create enclosures of varying

sizes and shapes, which support shelves and presentation materials as well as an adjustable-height communal worktable.

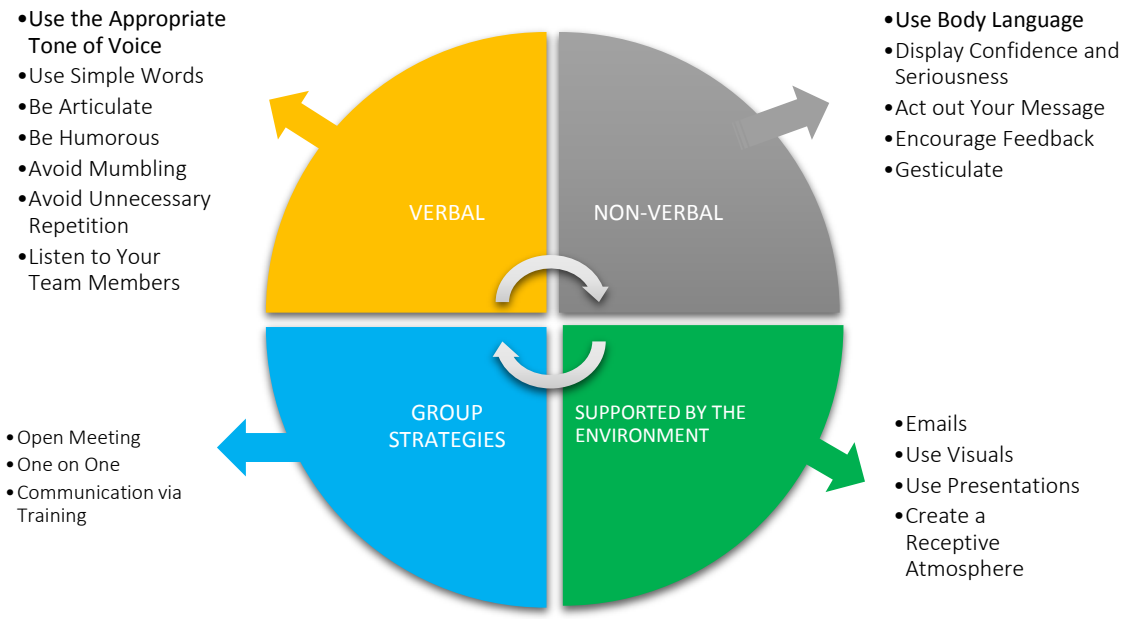
7.5’s lightweight.
Herman Miller

It is possible summarize that the company trend is based on modern shapes that consider freestanding elements, efficient use of space and materials, modularity systems and accessories easily configurable. Base on the long history and domain in the current market of furniture design we tried to identify this kind of features in the scenarios we analyzed.

1.2.2 Communication in the office

*The ability to communicate and **shape meaning** is one of the most powerful and ubiquitous forms of design in today’s world. (Carnegie Mellon Design School).*

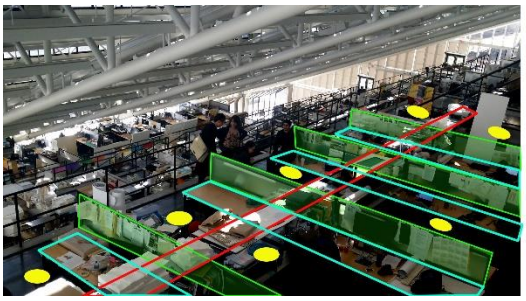
According to Belonwu, Valentine in "20 ways to communicate effectively with your team", Understanding that the art of communication begins with human interaction, the role of the physical environment is secondary but important. During this investigation we found once the ground rules for teamwork are established, and succeed in creating what is known as the group skin, it is easy to recreate the environment for communication and productivity in the workplace”. With the following graphic we summarized the author conclusions.



1.2.3 Context (Academic)

Harvard Design School. In the images shown the graduate space at school of Design at Harvard University. This space has been designed with the purpose of creating separate offices for each student offering a similar experience to the real work environment. The internal structure with a - U- shaped - includes three different spaces which allows the user to organize work according to the design phase.





Rochester Institute of Technology.

At RIT students under and graduated level both have the opportunity to customize their own space. The students select a spot with a table and a chair and built around the structures they consider necessary for its development process. In the following images is shown an example of two students with community vision. Because they must share space, they decided to design a module which allowed them to separate and organize the space as well as provide privacy for individual work but open enough to facilitate communication between them.

In the case of postgraduate space, the space appears more chaotic. Due to the type and number of projects that develop in parallel, students have greater challenges in the organization and storage

of materials, but also they have more freedom to redistribute work spaces as a function of teamwork and individual. They also rearrange the work dynamics, each semester students cleaned and redesign the space according to the convenience of work.

1.3 Target Market

Profile 1: ***Persona:*** *Koby Trout.* ***Company****: BZ Design Consultancy*

Young designer, team member of a Design Studio compound by 2 industrial designers, 1 graphic designer, and 1 business manager and an engineer.

Age: 20.

Civil status: single.

Live in the same city. Share the physical environment (office)

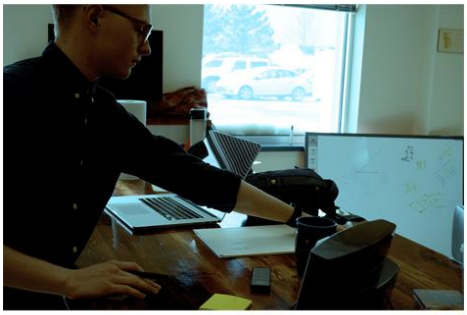
Entrepreneur from: 2014

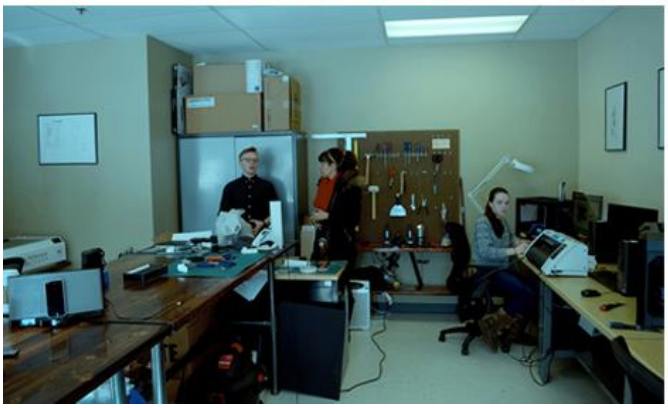
Company: BZ Design Consultancy

Interests: built a successful design consultancy.

Location: Rochester Tech Park. Rochester New York. USA.

The company designed the furniture and the space according to their need. Their space is separated by, business area, meeting, drawing and model making and 3D printing space.





Profile 2: ***Persona:*** *Undergraduate students (industrial design).* ***Institution****: RIT.*

Ages: 19 - 24.

Status: Junior and senior students.

Live in campus residence.

Institution: Rochester Institute of Technology. School of Design.

Interests: learn and practice Industrial design.

Location: Rochester, New York. USA.

Profile 3: ***Persona:*** *Graduate students (industrial design).* ***Institution****: RIT.*

Ages: 24 – 30.

Status: 2nd year Graduate students. Financed by scholarships or parents.

Live in/off campus.

Institution: Rochester Institute of Technology. School of Design.

Interests: learn and practice Industrial design.

Location: Rochester, New York. USA.

The study of group A, undergraduate and graduate academic environment, began with the analytical observation of users interacting as a group and individually. The group B was analyzed based on group dynamics to solve problems, as well as on the use of space for the development of the design process. And the group C research was based on analysis of the company solutions to get more efficient use of space.

1.3.1 Benchmarking

Categories: Shapes, structures materials, technologies, systems, and storage.

Systems **Case of Study 1:** ***Product****: "Bivi".* ***Company****: Steelcase.*

Modern style and simple modularity adapts to any organization, adjusting to the many ways people work and collaborate. Bivi bench desks, seating and accessories help you create a workplace that's all about who you are today and what you'll become tomorrow.

For one: $899 For Two: $1,124 Plus Two: $923 Plus One: $703




Table for One

bivi brochure
turnstone spec guide
furniture symbols library
revit models
environmental information

Table for Two

bivi brochure
turnstone spec guide
furniture symbols library
revit models
environmental information

Plus Two

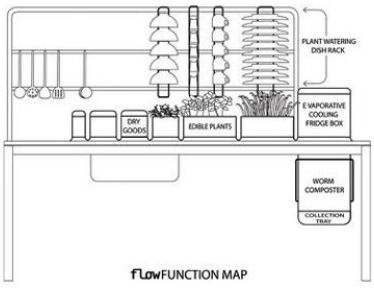
bivi brochure
turnstone spec guide
furniture symbols library
revit models
environmental information

Plus One

bivi brochure
turnstone spec guide
furniture symbols library
revit models
environmental information

Systems **Case of Study 2:** ***Product****: "Flow and the kitchen of terrestrial mechanics".*
Company*: Studio GORM.*

"…project unites nature and technology to efficiently utilize energy, waste, water and other natural resources in a cyclical transformation."



Systems **Case of Study 3:** ***Product****: "Flow and the kitchen of terrestrial mechanics".*

2.1 Empathic Design

"People who feel socially connected contribute to communities and to a society as a whole. They help to create what is sometimes called "social capital", the networks that help society to function effectively. Connectedness is something we mostly take for granted in our day-to-day lives; it just happens without conscious effort. We don't question the nature of our relationships; we just live with the people surrounding us. In order to be able to design for connectedness, however, we do need to understand the basic construction of social relationships". Wildevuur, S.

Empathic design is then a user-centered design approach that focus its attention on users experiences and feelings around products.

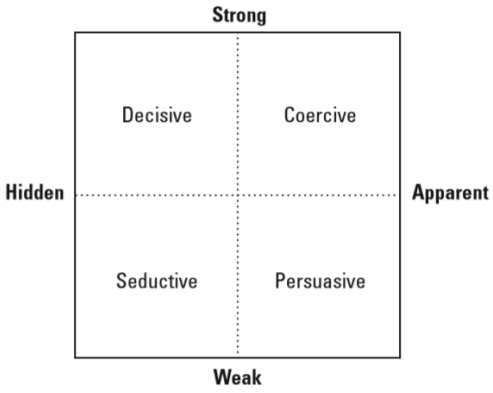
Design Process:

- Observation (Experience)
- Capturing Data (research)
- Reflection and Analysis (design process)
- Brainstorming for solutions (product definition)
- Developing prototypes of possible solutions (manufacturing)

For this research we combine traditional scientific method with empathic design. The empathic design will allow us to address the investigation at the first instance, to obtain information about users needs based on analytical observation, but then as a supplement and for verification of our method, we decided to implement surveys and interviews with selected users.

I order to understand and focus our user study, we follow basic human needs identified in Maslow's Hierarchy of Needs, morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of acts; as well as study the products influence theory that both philosophers and sociologists have repeatedly laid bare the often unintended effects that products have on behavior and society. According to Tromp, N. and others in *"Design for Socially Responsible Behavior"* the product influence could be classified in:

Figure 10
Four types of influence based on the dimensions of force and salience.



- **"Coercive design** is strong and explicit in its influence (e.g., the speed camera to discourage fast driving).
- **Persuasive design** is both weak and explicit in its influence (e.g., a campaign to promote healthy eating).
- **Seductive design** is weak and implicit in its influence (e.g., a microwave's effect on family dinners).
- **Decisive design** is both strong and implicit in its influence (e.g., a building without any elevators to ensure physical activity)". Tromp, N

The authors support this classification based on multiple experiments and analysis of people interacting with products. They conclude design now is about the sense of responsibility. Designers need to assume the responsibility as a "shapers" of society. "Doing so entails a shift from a user-centered approach to a society-centered one. In defining desired social implications and behavior, it is the designer's task to incorporate relevant experts, such as sociologists and

policy makers, as well as citizens. Subsequently, it is the designer's quality and expertise that can translate the collective concerns to individual concerns by means of design". In order to understand how to approach this research towards empathic design, we find theoretical analysis about what is good design. **Positive Design** more than a methodology is a goal in product design. In the Positive Design by Desmet, P., and Pohlmeyer, A., the authors address the question of how design can contribute to the happiness of individuals–to their subjective well-being. According to them "positive design initiatives deliberately intend to increase people's subjective well-being and, hence, increase an enduring appreciation of their lives. The positive design framework combines three key components of subjective well-being, as shown in Figure 1".

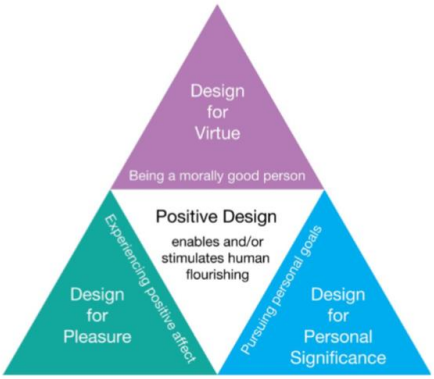


Figure 1. Positive Design Framework.

Design for pleasure. The first ingredient addresses happiness that comes from enjoying the moment. Products can evoke positive feelings (maximizing pleasure and comfort) or reduce negative feelings (minimizing pain and discomfort). **Design for personal significance**. The second ingredient addresses happiness that comes from a sense of personal meaning. Personal significance can also be derived from the awareness of one's past achievements or from a sense of progress toward a future goal. With this in mind, products can be resources that people use to attain these goals. And **Design for virtue** where the third ingredient addresses happiness that is the (by-) product of virtuous behavior. With this in mind, our product the Desk Common, is look for design for personal significance and for virtue because is a product

Chapter 2 Design Process

2.1 Design **statement**.

2.2 Product **requirements**

2.3 **Ideation**: concept evolution

2.4 **Final Concept** (functions and features).

2.5 3D modeling.

2.1 Design Statement

By improving the communication of ideas through the efficient use of the work environment, a new and inexperienced Design Studio would have more chance of being successful in the labour market, with the addition that this process becomes an enriching experience.
The objective of this research is to create objects that improve the communication of ideas and generate positive experience among members of a design studio.

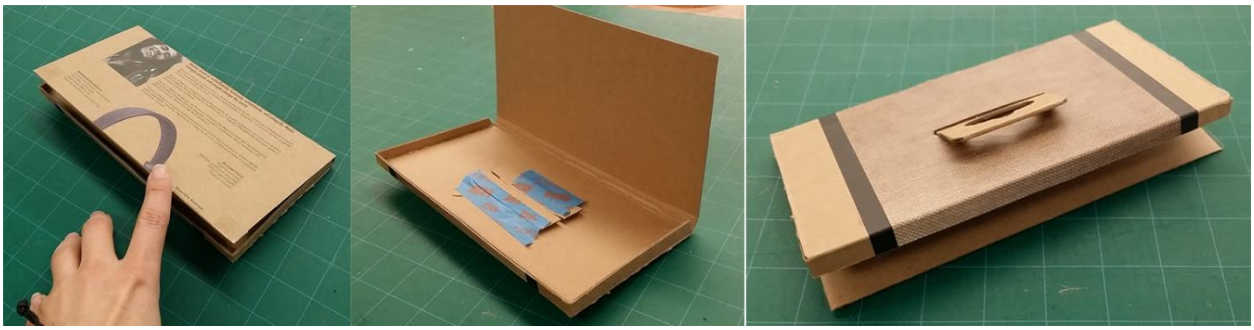
2.2 Product requirements

According to the user and environment research, the product must be:

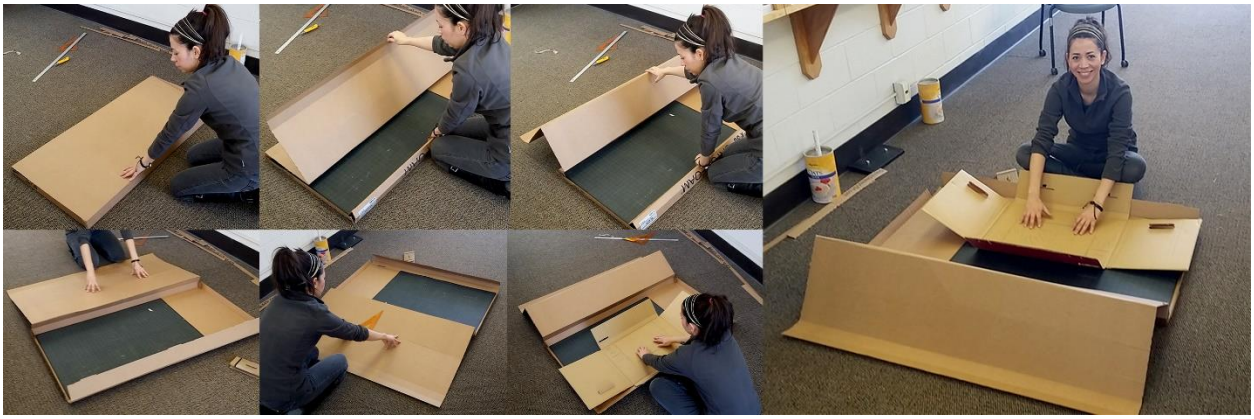
- **Persuasive** by being weak and explicit in its influence to promote healthy working environment.
- **Seductive design** by having an implicit influence about the benefit of working on groups. The vision of group, it means, two are better than one. Working on a team will provide more benefits than challenges.

2.3 **Ideation**: concept evolution

Concept 1: Portable desk. 25% scale model.

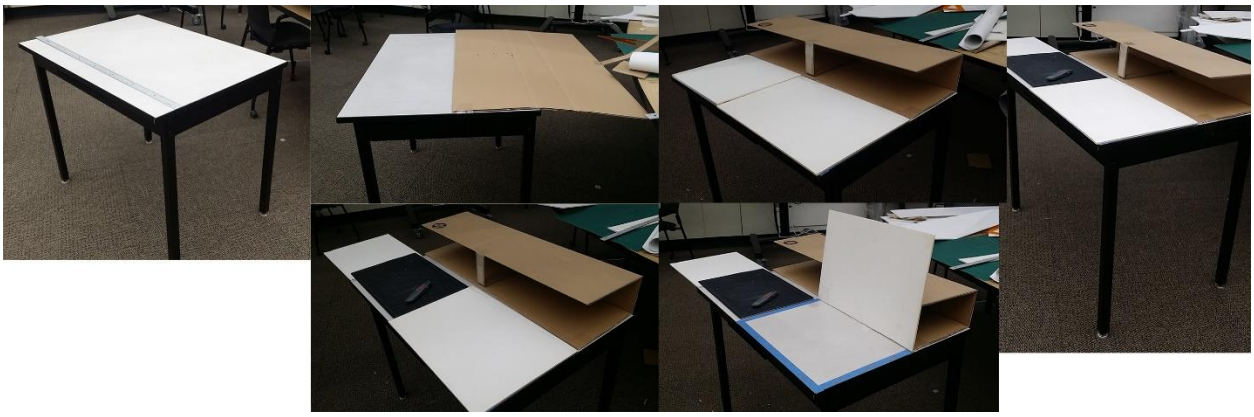


Concept 1: Portable folding desk. Full scale cardboard model for portable desk.



Small suitcase – part of the system.

Concept 2: Folding top desk. Full scale



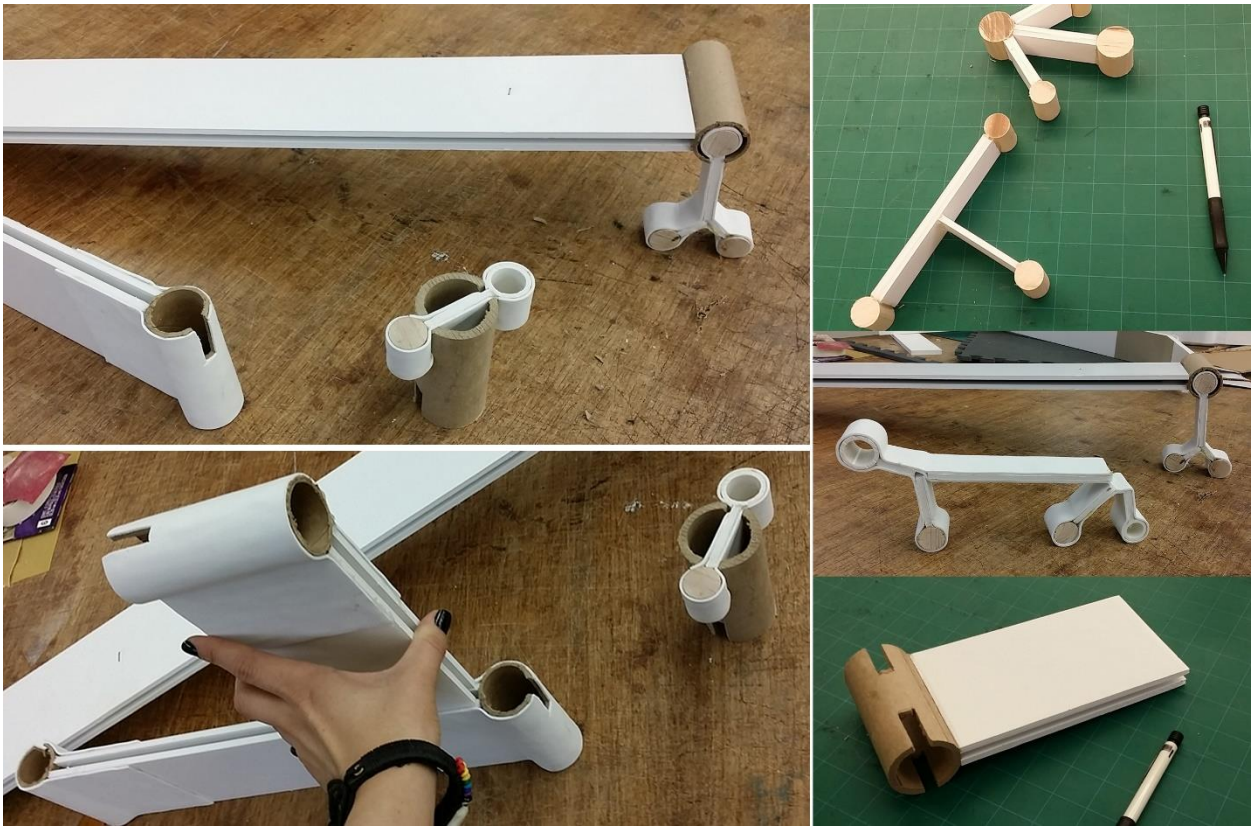
User testing full size of concept 2.

This concept was focus extend the workspace and hide elements within the desktop.

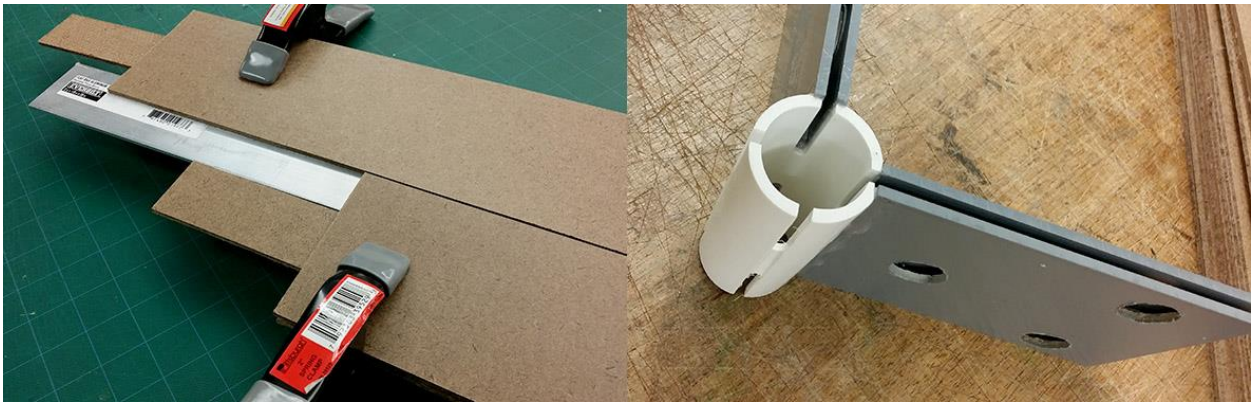
Concept 3: Organic Legs. Forms explorations inspired by organic shapes. This structure mimic insect legs. We were interested in features like flexibility and resistance.

Legs study.

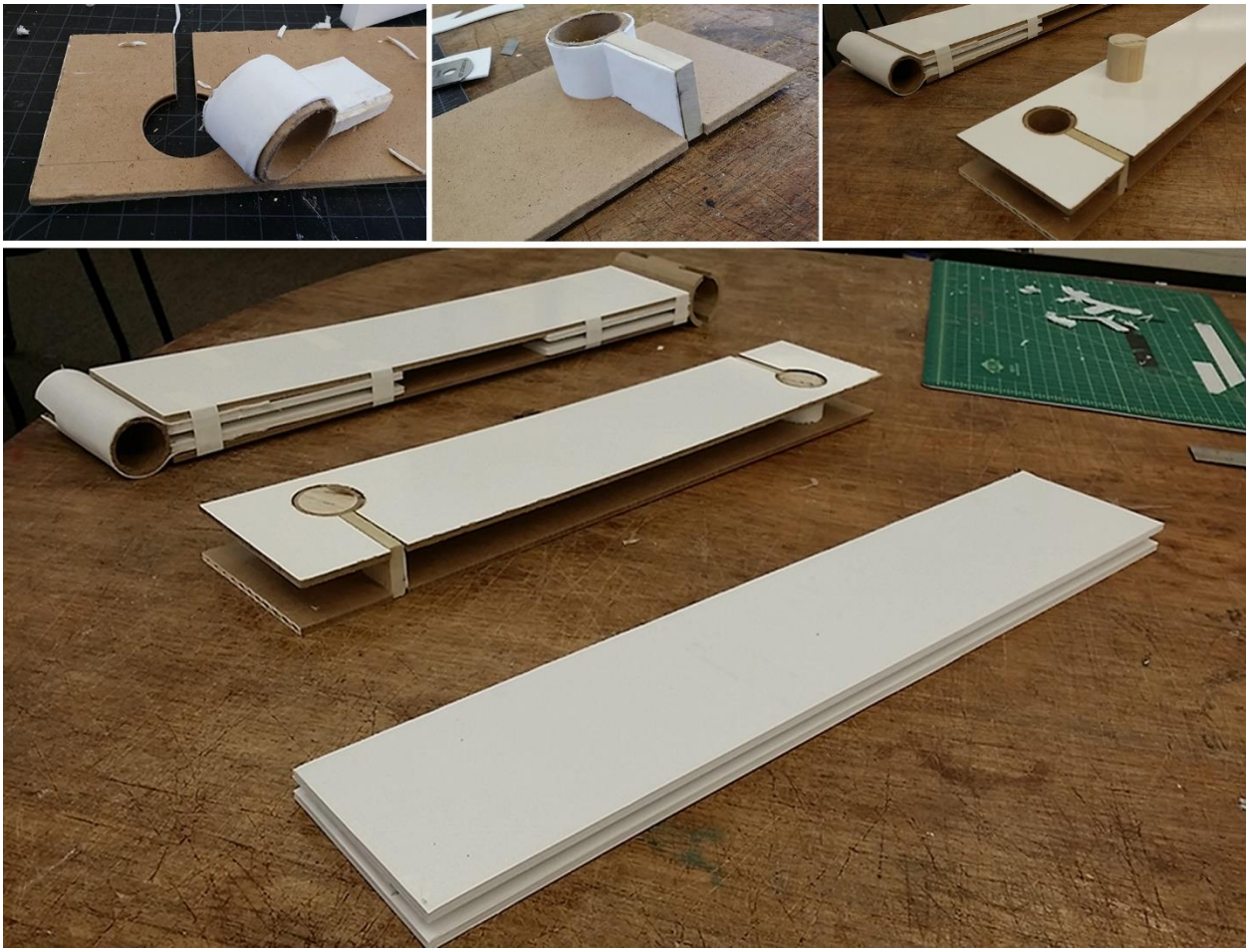
Concept 4: Joints. Connection explorations. Looking for organic shapes and modularity.



Model making. Trying real materials. (PVC, aluminium and MDF).



Reducing material and weight in the structure.



2.4 Final Concept

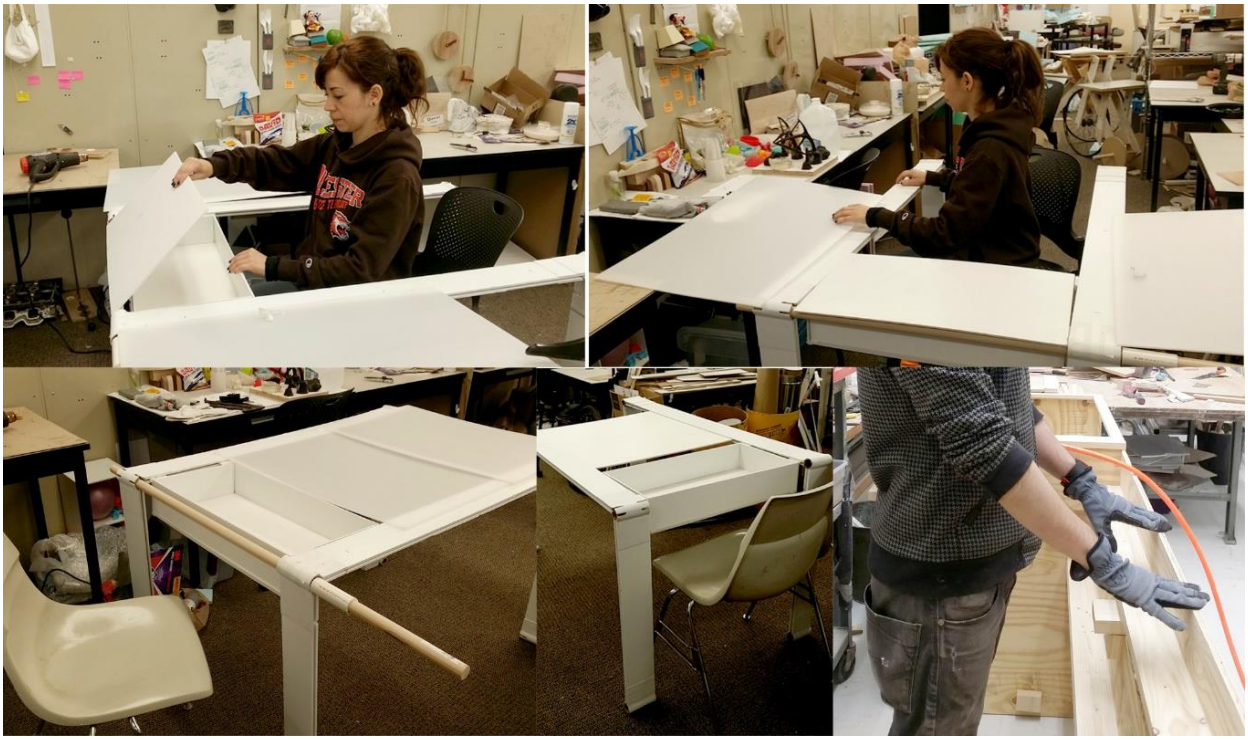
"Common" is an office furniture system inspired by EMPATHY as a strategy to share ideas in the workplace. Work in multicultural and transdisciplinary team in the design area.

The experience with Common. Emphatic aspects.

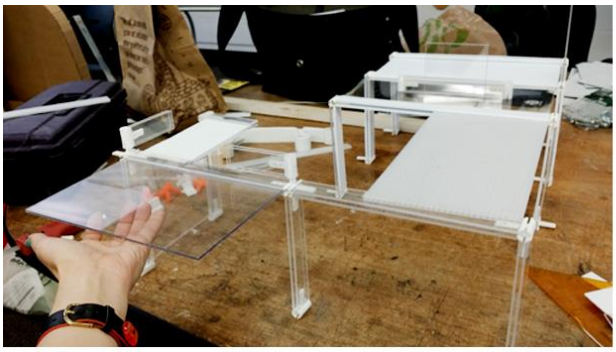
Common means sense of community and teamwork benefit and the use of modularity as building system. For users' enjoyment, Common offers a varied palette of finishes and combinations based on a main aluminum structure covered with wood, plastic or glass. All pieces in this system work as a modules easy to assemble, package and transport and, its aluminum frame providing resistance, elegance and lightness.

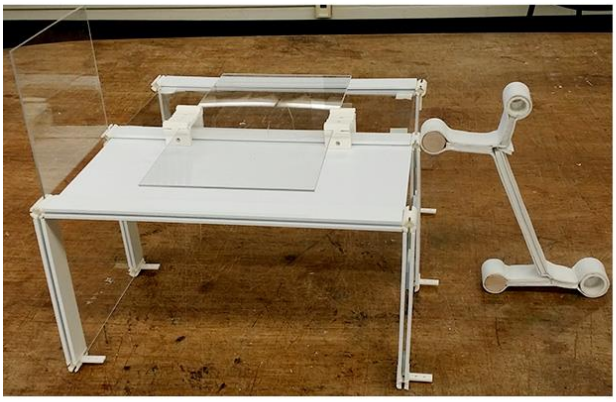
Common is a friendly product system that has been designed considering the environmental impact. In order to achieve this goal, this system uses recyclable materials and simple forms that permit the use of low-tech manufacturing processes and generate minimal waste at the end of product lifecycle. From the business perspective thanks to its affordable manufacturing technology and modularity, the cost value is much lower than competitors.

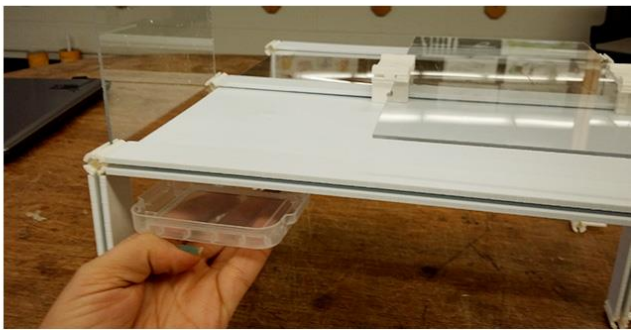
2. 5 **Modeling** (mock-ups / 3D modeling).



Full size model in plastic sheets and cardboard. Different configurations and functions were discovered while testing this model. In order to have a big picture of the system the concept was built in 3D. The joints were 3D printed and assembled with PVC and acrylic sheets in 25% scale.





After assembled the desk at 25% scale, we discovered that the full size joints mock-ups were familiar in shape and gave us a different perception of a future system. By analysing different configurations, we decided that the joints would be scaled and to be part of a future seating system. The image above could illustrate this statement.

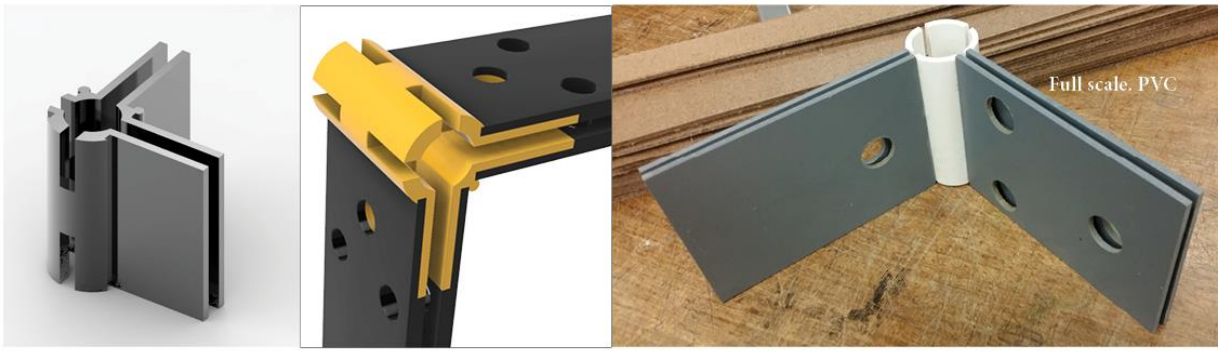
Chapter 3 Prototyping

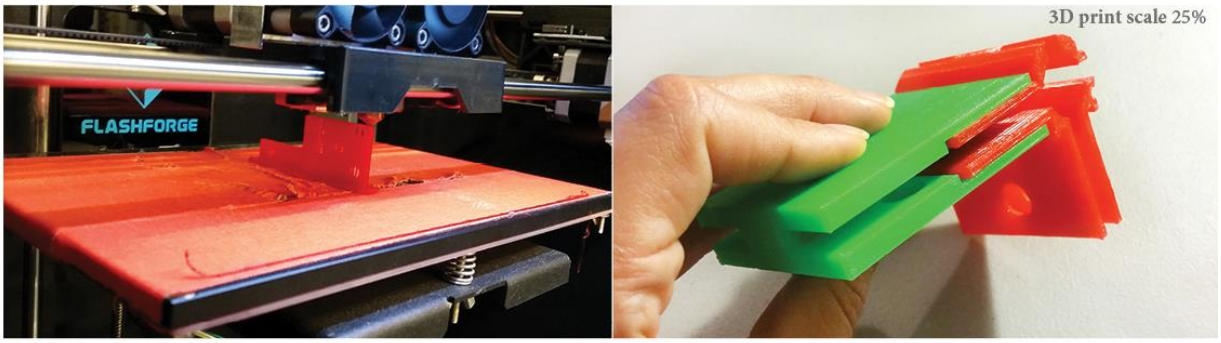
3.1 Model Making. 3d Printing, plastic, wood, metal.

3.2 Documentation.

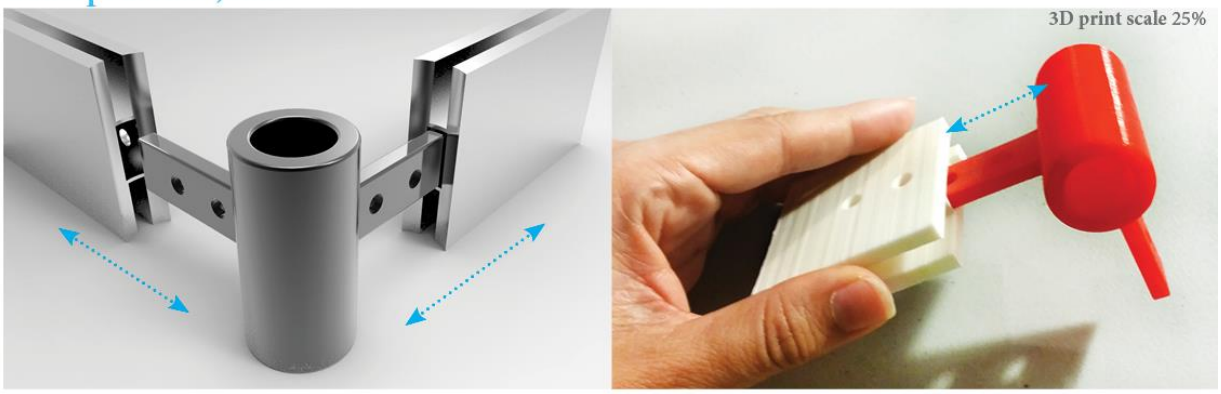
3.1 Model Making. 3d Printing, plastic, wood, metal.

Concept 1: solid corner.





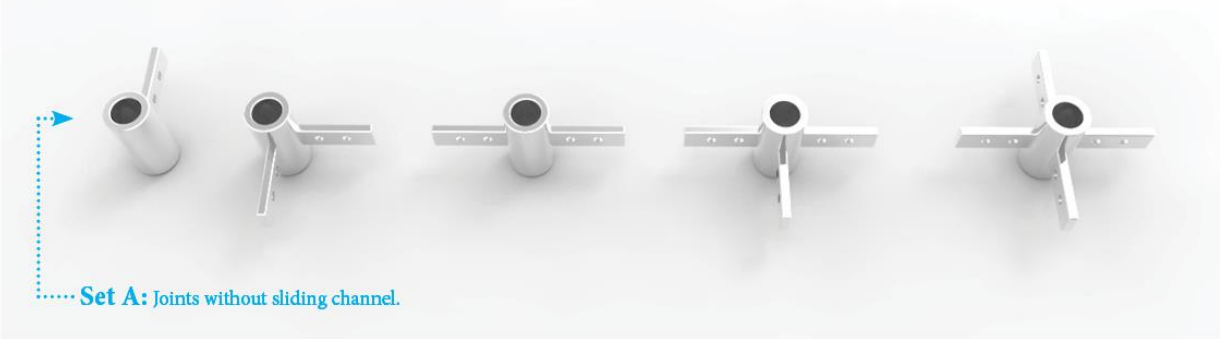
Concept 2: Axis Joint.



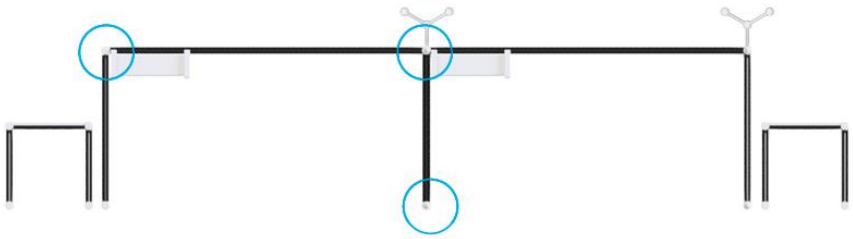
3.2 Documentation.

Sets of Joints

A JOINT is defined by an aluminum cylinder which is welded from one to four rectangular sheets around its outer diameter. The number of pieces that adheres to the cylinder depends on the number of connections that this will be holding.



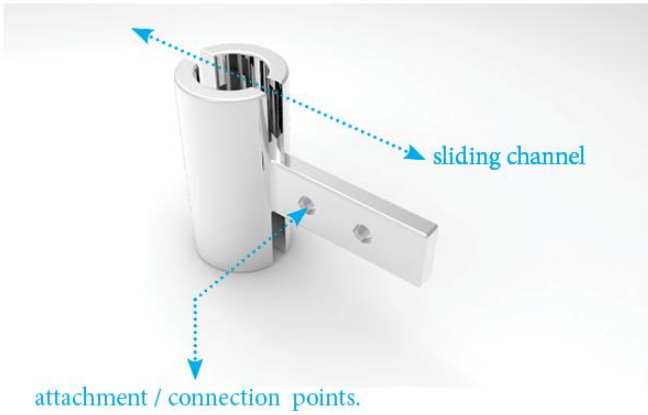
Locations:

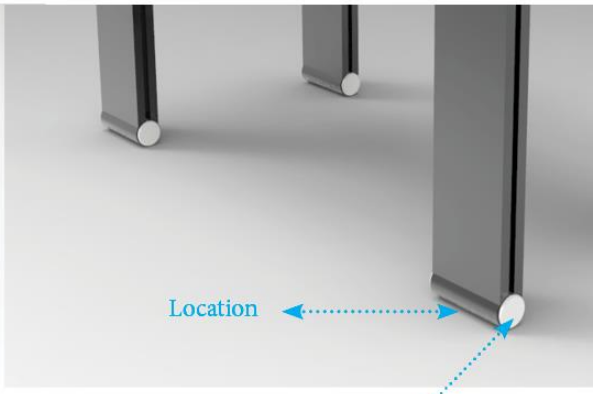


Finish: chrome, sandy, paint, satin nickel

Joint 1: Unidirectional.

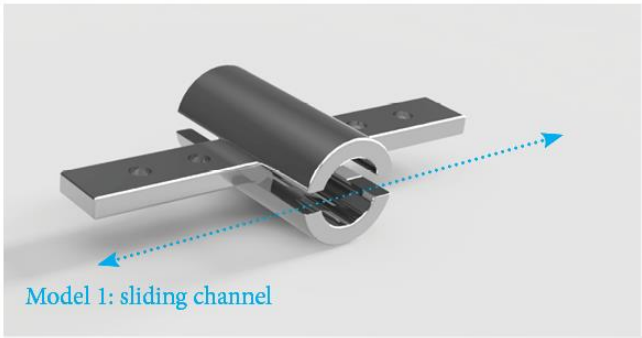
Functions: Plugs for the botton end of legs. Attachment point of the table leg.
Material: aluminum alloy.
Finish: chrome, sandy, black, satin nickel.
Detail at base: black / white rubber cap.

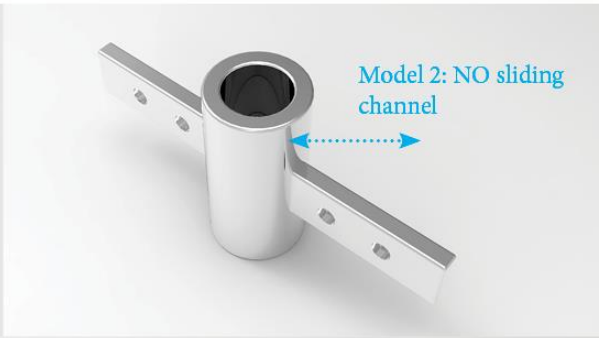


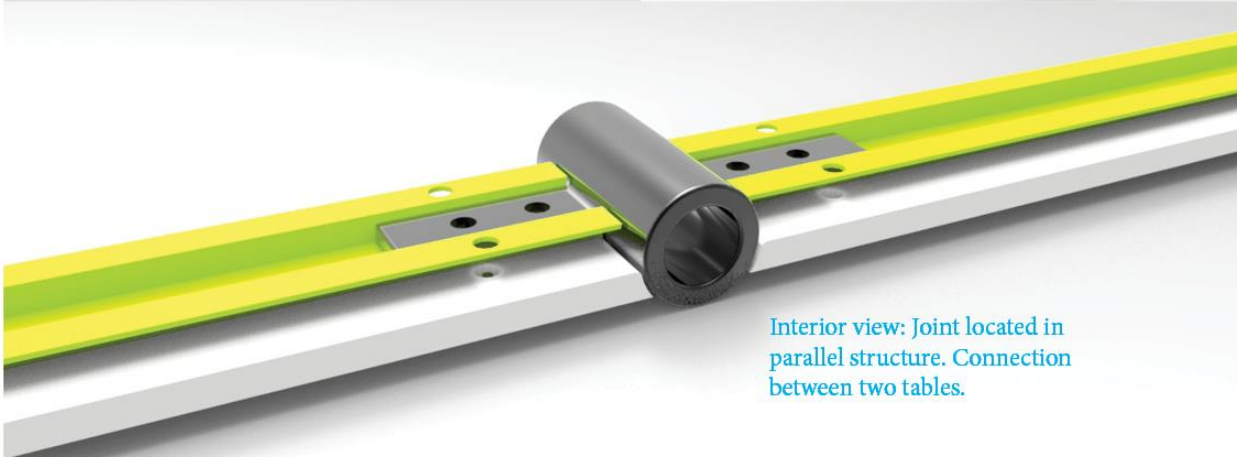


Joint 2: Parallel.

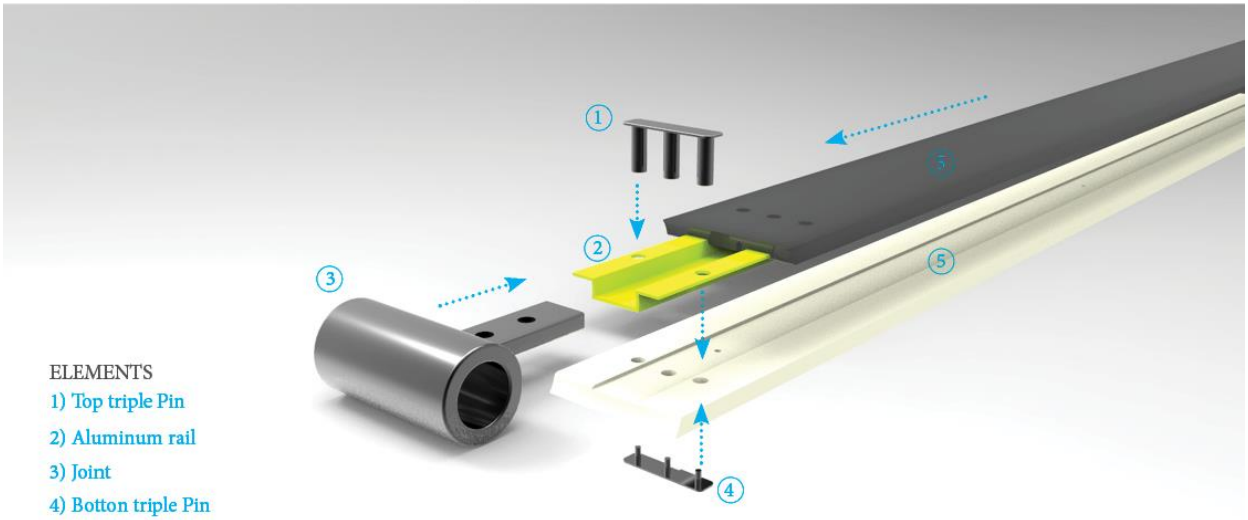
Functions: Plugs for the base of the legs. Attachment point of the table legs.
Material: aluminum alloy.
Finish: chrome, sandy, black, satin nickel.
Detail at base: black / white rubber cap.





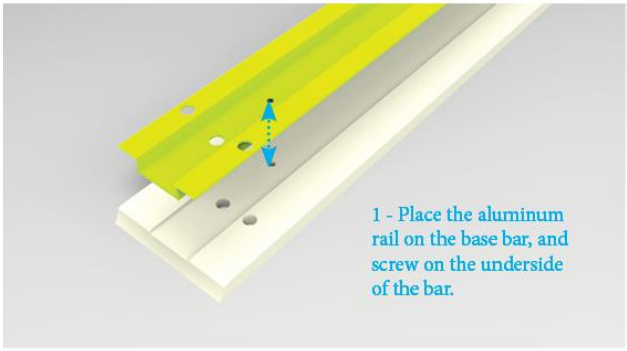


Exploded view - **Main structure.**

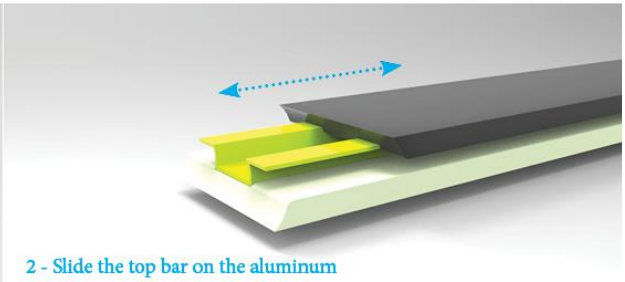


ELEMENTS
1) Top triple Pin
2) Aluminum rail
3) Joint
4) Botton triple Pin
5) Bar: metal / wood

Bar assembly directions



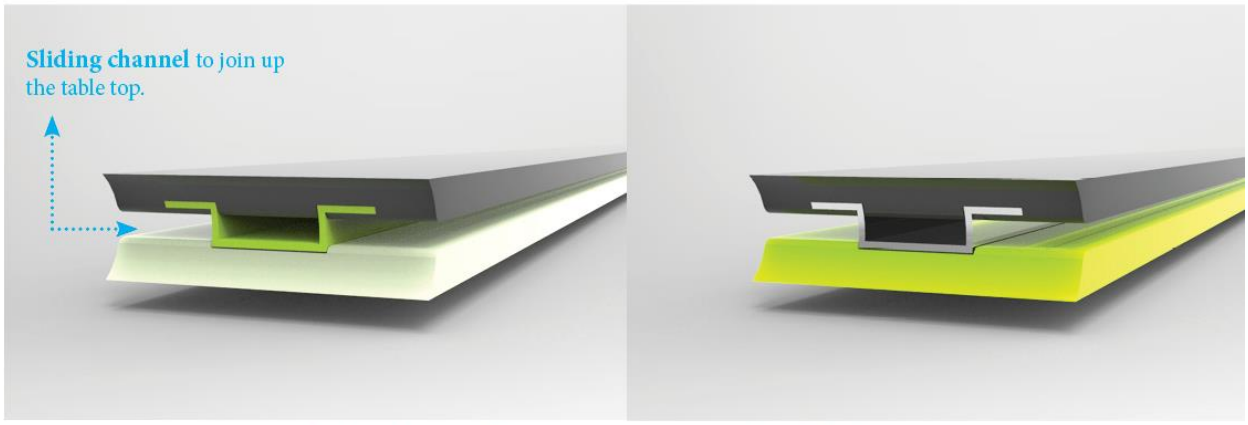
1 - Place the aluminum rail on the base bar, and screw on the underside of the bar.



2 - Slide the top bar on the aluminum rail. These parts remain fixed when added to the joint at the ends.

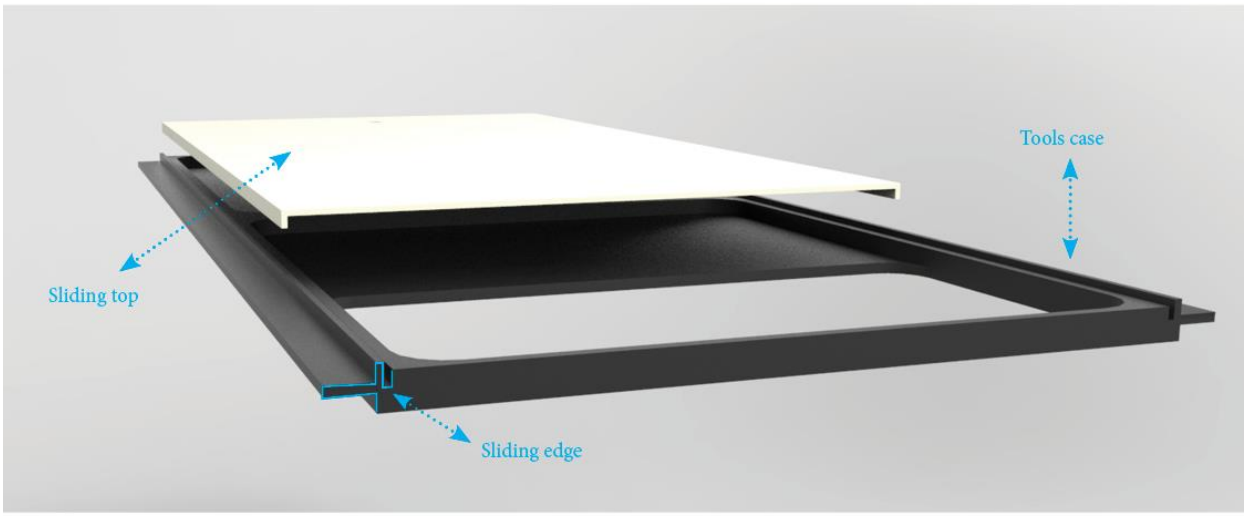
Customization

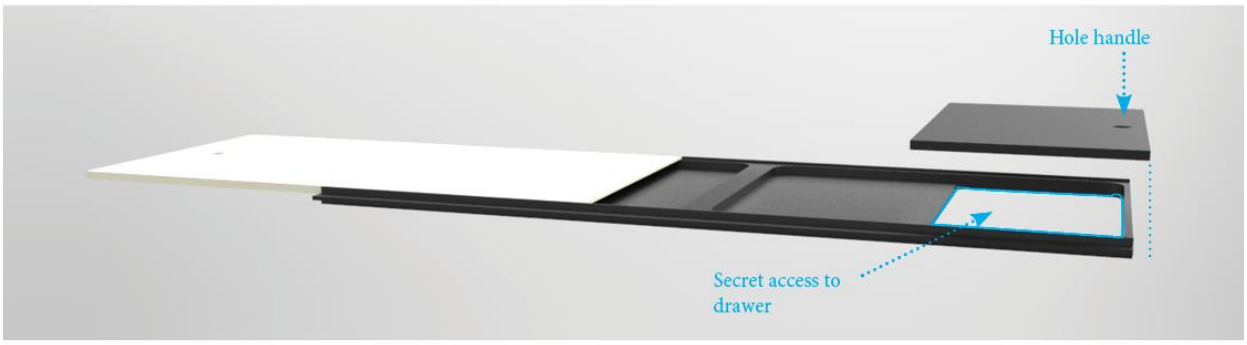
Sliding channel to join up the table top.



The three elements of the structure can vary in color and finish.
Materials: Wood and aluminum. **Colours**: all available on the market.

Table Top





Detail

Colors

All black

Black and metal

Glass, black and white

detail

Natural Wood, metal and black.

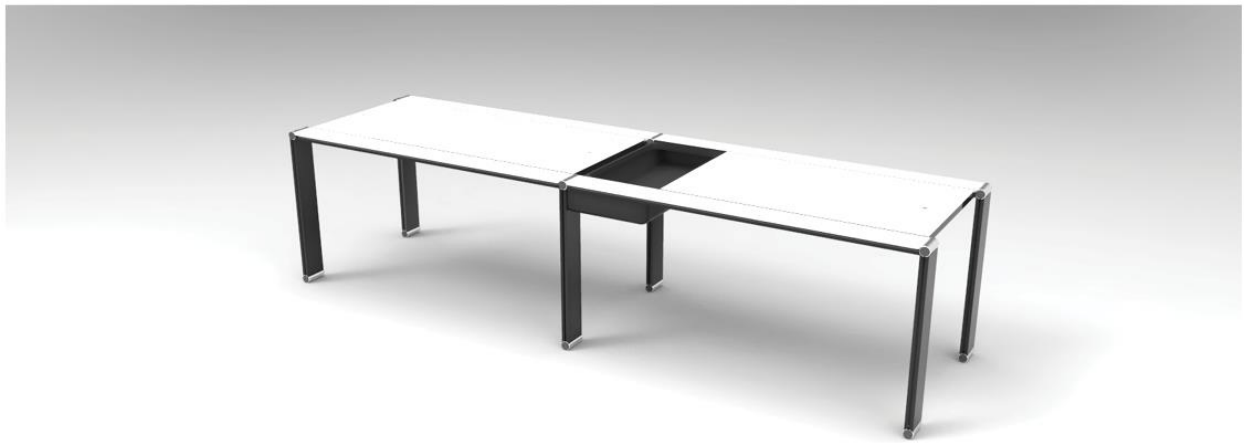
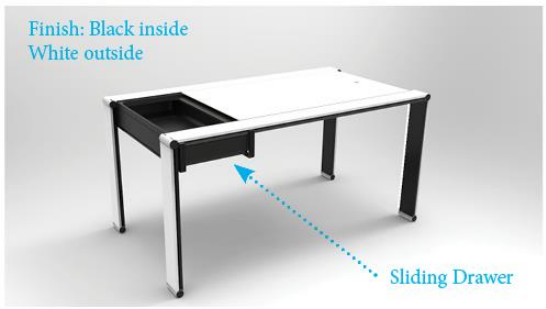
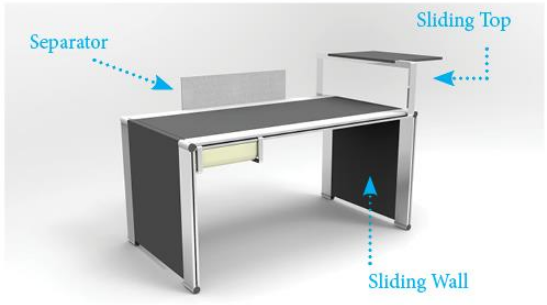


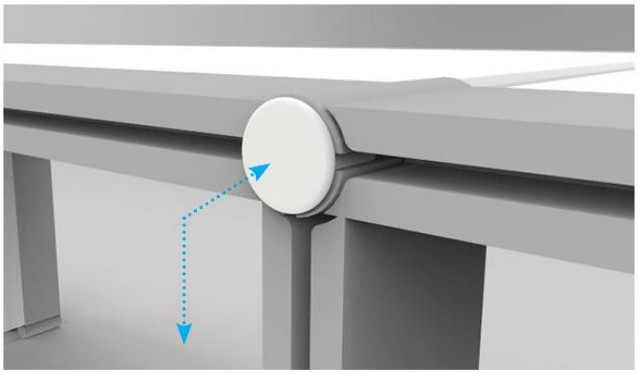
Table accesories and finishes



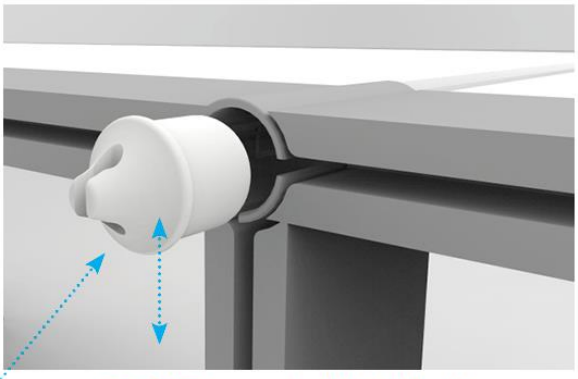


High end: Aluminum and glass

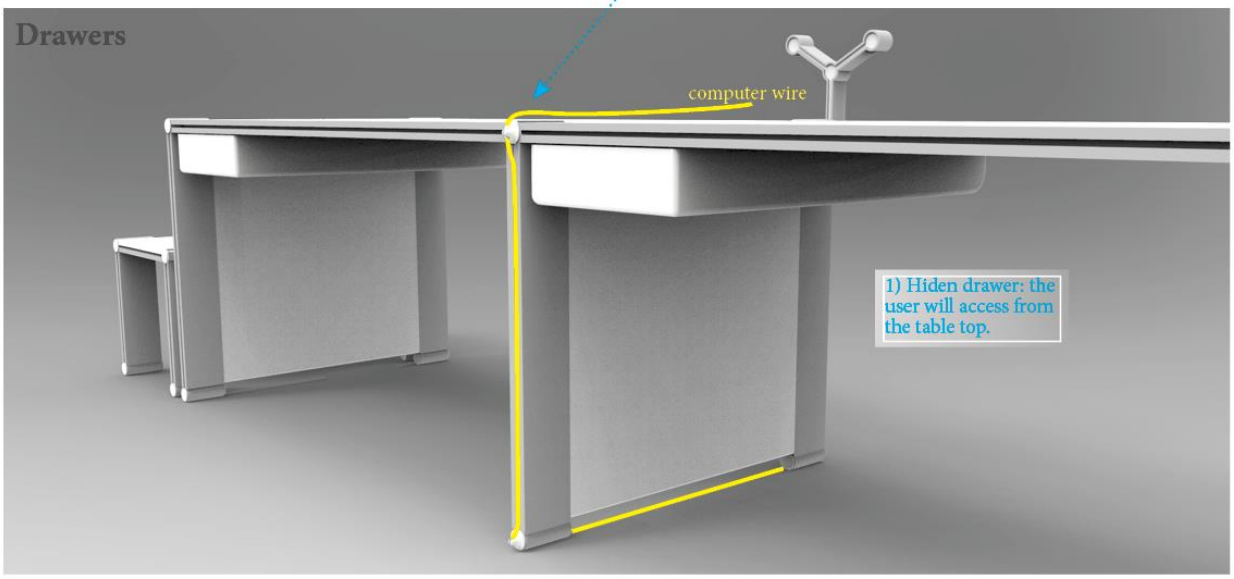
Accesories

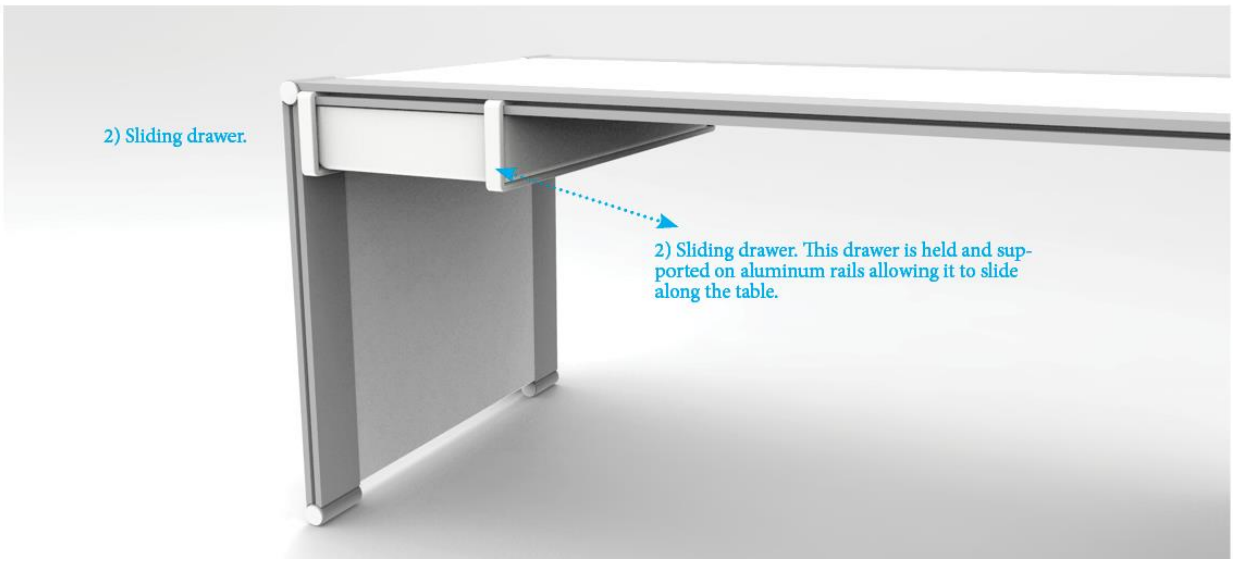


Flat rubber cap: black / white



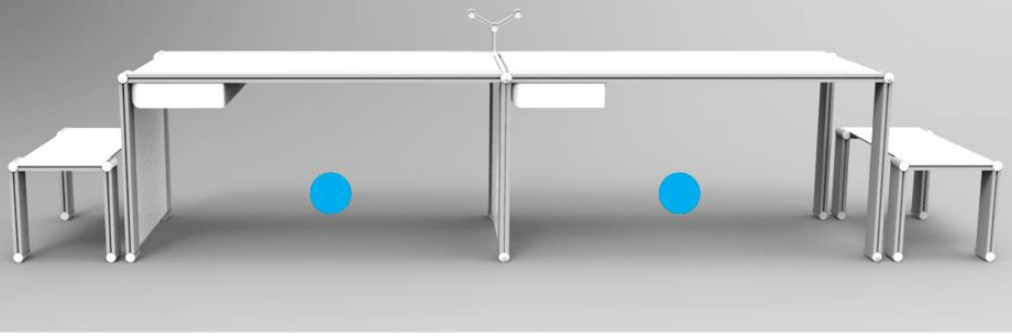
Cap 2: **Wiring organizer:** black / white rubber.





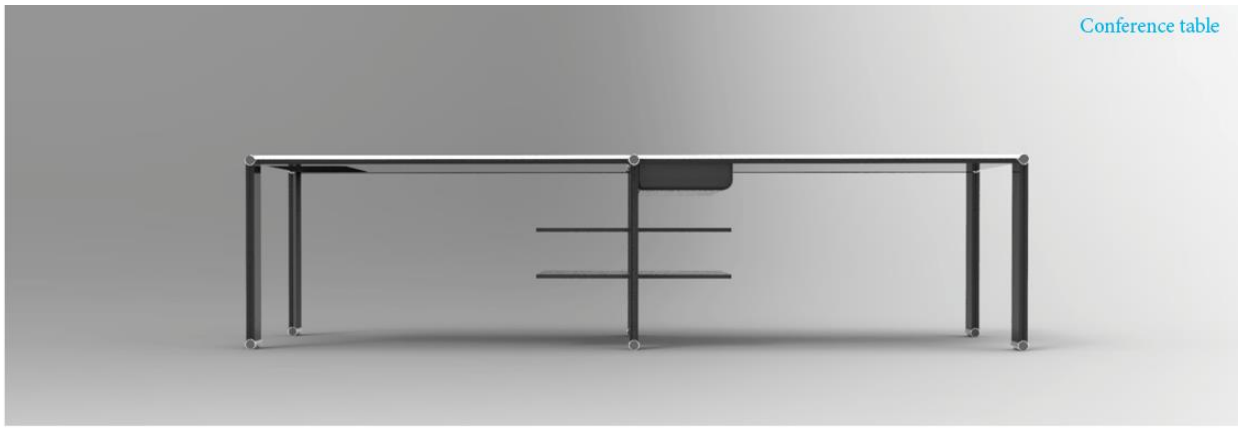
Office for One

Office for Two

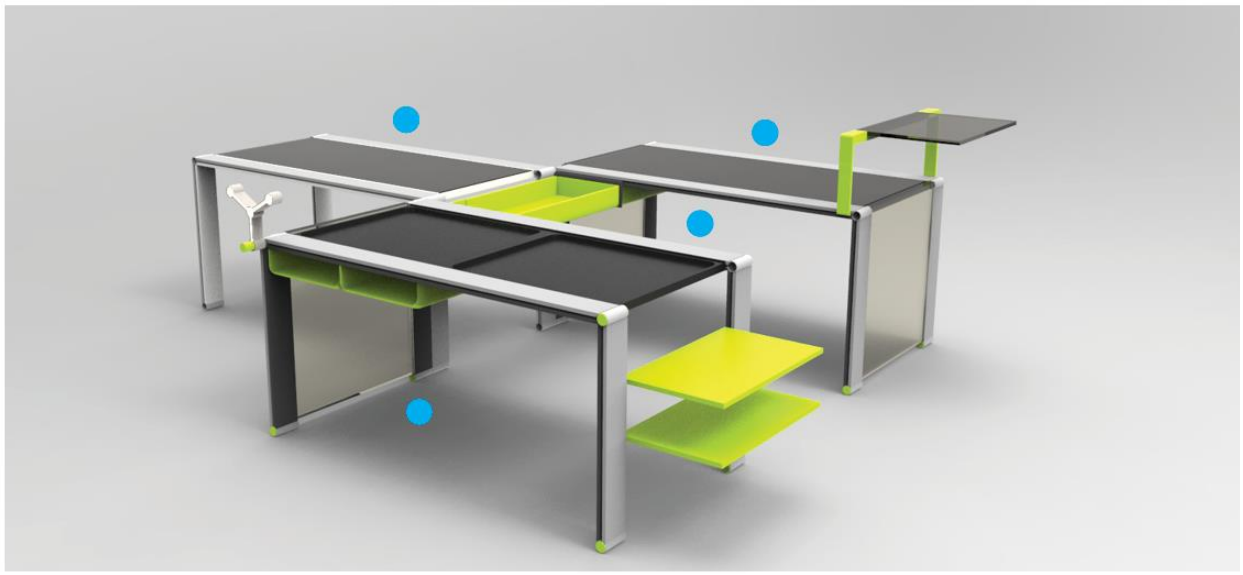


Office for Three

Conference table

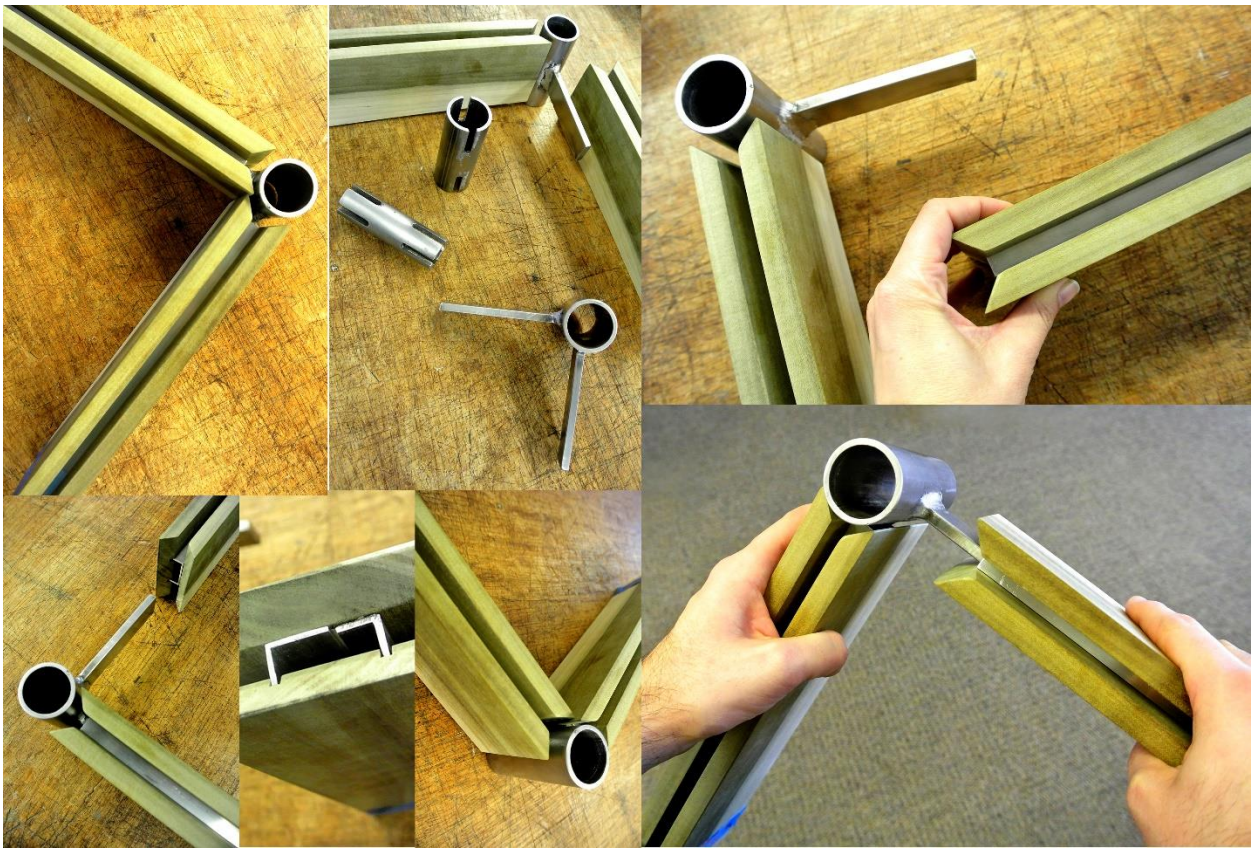


Office for Four



Office for Seven

3.3 Final Prototype.



Cutting - sanding – sealing - welding - overpainted - screwed - assembled

Conclusions

At present there are many industrial solutions for workspace environments. This topic has fascinated for many years architects, sociologists and designers. Some companies like Herman Miller and Steelcase among many others, have raised the furniture design to a specialty that involves various disciplines of knowledge. The psychological aspects associated with the impact of space in the development of a person in its workspace, is an issue that has been extensively studied by several authors. As shown in this work, the modern furniture design shall take into account psychological aspects as well as the environment. The ultimate goal is to provide positive experiences to users and thus improve their life quality.

After the formal exploration, technical learning and direct contact with potential users, furniture design inspired by empathy became a new way to practice friendly design. By studying the complex working environment in creative offices, different needs were discovered, needs that can be tackled through industrial products. Thus, the final design of *Common* is a system that has established the beginning of a language of forms that serve as the basis for the development of multiple

products in the future. Since the language of this system forms has been inspired by emotional needs of users, it might be said that the result of this work is not only a product – a *Common desktop system* but a method of sustainable design and for the people.

Empirical research from the empathic design, combined with scientific research has resulted in a working method for product ideation. The development of *Common* as *furniture system* inspired empathy with sustainable approach proves that it is possible to combine emotional, functional and sustainable aspects of a product. The study of personal user experience during this investigation, allowed to extract a pattern of behavior that was translated in functions within this furniture. Actions like sharing, collaboration, respect public and private spaces, the need for change and expansion in the workspace, made us develop a furniture whose features allow the user to adapt to these circumstances intuitively.

Common also stimulates creativity in the workplace, providing the basis for customizing the workspace by each user or company. From the point of view sustainable design, raised production processes make this product a sustainable both ecologically and economically.

The technical solutions applied to the furniture system obey the need to simplify the production processes to be further developed in a limited technological environment, such as countries in development with economic constraints. Particularly this project aims to become the basis for a small-scale business development in Venezuela, homeland of the author.

"*Common*, empathic workspace inspired for people".

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Appendix

User Interviews

- Describe your workspace, how is the space distributed? Why?
- What do you like in your workspace? Why?
- What do you dislike in your workspace? Why?
- If you could, what would like to change in your workspace?